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A SURVEY OF MODERN RUSSIAN FERTILITY*

*At the time when "the division of Europe into East and West"** occurred, fertility formed a dividing line between the two blocs that neither the baby boom nor the later reduction in family size was to efface. The features characterizing the socialist countries – earlier childbearing, almost no purposely childless women, and the adoption of political measures to incline the fertility level – remained up to the beginning of the 1990s.* Alexandre AVDEEV*** *and* Alain MONNIER**** *complete this panorama by an in-depth study of Russian fertility throughout this century, exploiting remarkably well the demographic data that have recently become accessible in that country.*

In 1992, for the first year in peacetime, there were more deaths than births in Russia. The difference was relatively large: 220,000, corresponding to a rate of natural increase of –1.5 per 1,000, but this was nothing compared to the following year: 750,000 (or –5.1). The numerous return migrations of Russians from the former Republics of the Soviet Union were not sufficient to make this up.

This negative natural increase was due first and foremost to the recent fall in crude birth rates (CBR), which began in 1987 (Figure 1). Natural increase had exceeded 5 per 1,000[1] for two decades, from the mid-1960s to the mid-1980s, despite the steady growth of crude death rates (CDR) – reflecting population ageing in a country where the mean length of life had levelled off –, since this was offset by a roughly equivalent rise in CBR. Mortality, after a temporary downturn resulting from the drastic anti-alcohol campaign led in 1986, has since continued to rise, more sharply at the beginning of the present

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* The data used in this study were collected, on the initiative of A. Avdeev, by Marina Pechkova and Irina Troïtskaya, researchers at the Russian Academy of Sciences and the University of Moscow respectively. Jean-Paul Sardon (INED) exploited the vital registration data using the methods developed in the framework of the *International Project on Demographic Analysis*, thus, the fertility rates are comparable to those already published, in particular by the Council of Europe, for most of Europe.

** Title of an article by A. Monnier and J. Rychtarikova in *Population: An English Selection*, 4, 1992.

*** University of Moscow.

**** INED.

(1) Except in 1979 and 1980, when it fell very slightly below this level.

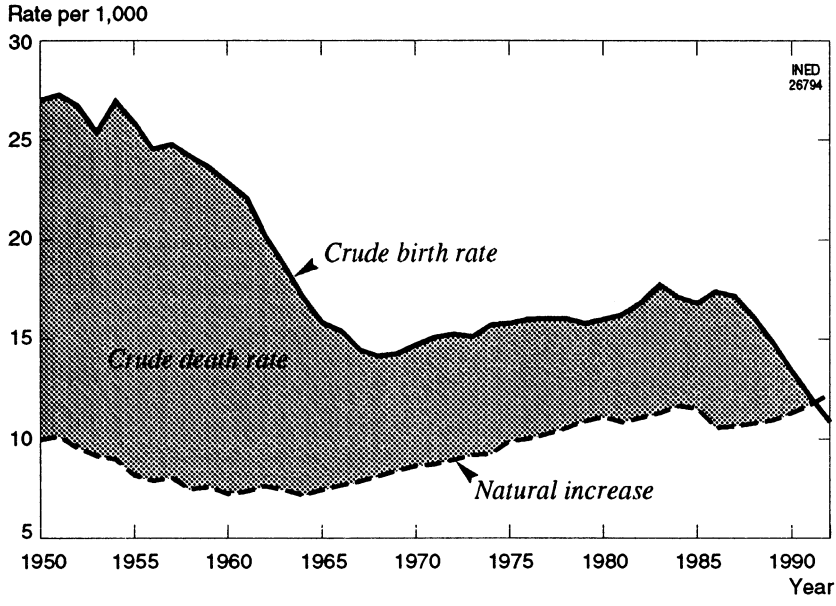

Figure 1. – Crude birth and death rates in Russia (total population)

decade owing to an increase in alcohol-related and violent deaths in particular[2].

Simultaneously, CBR has fallen since 1987. This turnaround was all the more spectacular as the family policy implemented at the beginning of the 1980s had taken it to its highest level in 20 years. From 1987 to 1993, the annual number of births fell by 1,121,000 and CBR shrank by 46% (from 17.2 to 9.3 per 1,000).

It was the conjunction of these two trends that produced the sharp drop in natural increase, from +6.6 in 1987 to –5.1 in 1993, which corresponds to going from an excess of births of 970,000 to an excess of deaths of 750,000.

The monthly data show that natural increase first became negative at the end of 1991, in October for the urban and December for the rural population. Since in Russia almost three quarters of the population is urban, the national value became negative in November.

In the present study, we shall attempt to throw light on the recent fertility decline in Russia, by analysing the situation during the latter decades, after a historical review of developments since the turn of the century.

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[2] See France Meslé, Vladimir Shkolnikov and Jacques Vallin, «Brusque montée des morts violentes en Russie», *Population*, 3, 1994.

I. – A historical review of Russian natality

From the beginnings of the Revolution to the death of Stalin

At the end of the 19th century, the demographic transition was not under way in Russia: CBR values were around 50 per 1,000 and CDR more than 35 per 1,000.

Russia was then essentially agricultural and very archaic. The population consisted mainly of peasants who owned patches of land barely adequate to feed their families. The abolition of serfdom (on 19 February 1861) did not boost the economy, and most of the peasants remained very dependent on the *mir* (peasant community), from whom permission was required to sell land or move to the city. Consequently, there was no rural exodus in the last quarter of the 19th century and reproductive behaviour remained traditional. This explains the growth of the rural population, from 53 million in 1858 (78% of the total) to 93 million (80%) in 1897[3]. During this period, the level of mortality was still very high: CDR was in the region of 35 per 1,000 between 1875 and 1900, compared to 15-25 in Scandinavia, England, France and Germany.

Towards the beginning of the 20th century, life expectancy at birth was 27 years for men and 29 years for women, and infant mortality was in the region of 300 deaths per 1,000 live births. This was the result of widespread poverty and an almost total lack of medical care. The extreme poverty in the countryside was a permanent source of social tension and jacqueries had broken out frequently since the abolition of serfdom. The weakness of the consumer market set up by the peasants also acted as a brake upon industrial expansion. But despite all these handicaps, Russia embarked on the course of industrial revolution during the last two decades of the 19th century, on the initiative of her leaders and supported by foreign capital. Industrialization was very rapid, thanks to the economic policy elaborated by Count Witte. It was in the first years of the new century that the demographic transition started in Russia. Mortality and fertility levels began to decline almost simultaneously, with a slight head start for mortality.

Figure 2 shows the fertility trends in Russia from that period on. First, some information is required on the material used.

From 1899 to 1917, the crude birth rates are those calculated for the 39 governments of 'European Russia', which formed a territory that was incorporated into the Soviet Union after its creation in 1922. The Russian Empire covered a further 11 governments where natality was lower, and which became independent states after 1917: Ukraine and Belorussia (now

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[3] Y.V.Vodarski', 1973, *Nasselenie Rossii za 400 let* (XVI-natchalo XXvv) (The population of Russia over a period of 400 years (16th to beginning of 20th century), Moscow, Prosvestchenie, pp.113-114.

Belarus), which participated in the constitution of the Soviet Union in 1922, and Poland, Estonia, Latvia and Lithuania.

From 1918 to 1935, CBRs refer to the European part of the USSR, in the frontiers defined on 17 September 1939, when the Soviet troops entered the territories of Ukraine and western Belorussia that belonged to Poland. The limits of this territory correspond roughly to that of the 39 governments.

From 1941 to 1945, for want of official data, we present *estimates* relative to the Russian Federation that show the extent of the precipitous fall in natality during this period.

From the end of the war to 1992, we have a complete time series of birth rates published by the (*Goskomstat*) State Statistical Committee.

The figure also displays the fertility curve for the USSR from 1918 to 1991 (with a break in 1941-5), which completes the picture for Russia, insofar as Russian births and population have always represented the major part of those relative to the USSR.

HISTORICAL LANDMARKS

1904-7: Russia's defeat in the war with Japan, followed by the Revolution of 1905-7 and the agrarian reforms of Stolypin, which opened agriculture to the market economy.

1914-7: The First World War, ending in the Revolution of 1917 and the fall of the Russian Empire.

1918-22: The Civil War, devastating famine and expropriation of peasants: the years of 'War Communism'.

1920: Liberalization of abortion laws.

1922-7: Implementation of the New Economic Policy (NEP) which injected new blood into the countryside, via the '*mir*'.

1928-33: Collectivization of farming, 'de-kulakization', the great famine of 1932-3 and beginning of the Stalin purges.

1936: Abortion banned and a pronatalist policy implemented.

1936-9: Sweeping purges, participation of the USSR in local conflicts.

1939-40: The 105-day war against Finland, causing Soviet losses estimated at 127,000.

1941-5: The Second World War (in Russia, known as the Great Patriotic War, it ended in May 1945), Soviet losses estimated at 28 million (for a population of 195 million in 1940).

1944: Promulgation of a law in favour of mothers of four children and more.

1953: Death of Stalin, relative liberalization.

1955: Legalization of abortion.

1981-2: Promulgation of new laws in favour of the family.

November 1991: The Soviet Union ceases to exist.

January 1992: Russia enters the market economy.

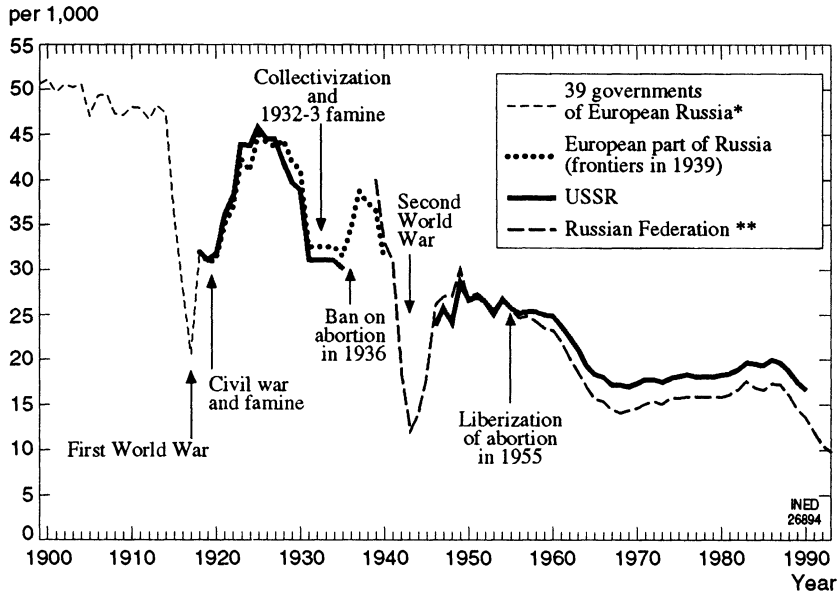

Figure 2. – Birth rate trends in twentieth-century Russia (CBR per 1,000)

* estimates for the years 1914-7
** estimates for the years 1939, 1940-9

Source:

USSR 1918-40 and the European part of Russia in the frontiers of 17.9.1939: Urlanis B.C., 1977.– «Dinamika urovnia rozjdaemosti v SSSR za gody sovetskoi vlasti» (Fertility dynamics in Russia under Soviet rule), in *Bratchnost, pozjdaemost, smertnost v Rossii i SSSR* (Nuptiality, natality, mortality in Russia and the USSR), Moscow, Statistika (ed.), pp.11-12;
USSR 1947-49: *Vosproizvodstvo nasselenia SSSR,* 1983 (Population reproduction in the USSR), Vishnevskii A.G. and Volkov A.G. (eds.), Moscow, Finansy i Statistika, p.156.
Russia 1898-1913: F.Lorimer, 1946.– *The Population of the Soviet Union: History and Prospects*, League of Nations, Geneva, p. 34;
USSR and Russia 1940, 1950-60: *Nasselenie SSSR 1973* (Population of the USSR 1973), Moscow, 1975, Statistika (ed.), pp. 69-70;
USSR and Russia 1960-88: *Nasselenie SSSR 1988* (Population of the USSR 1988), Moscow, 1989, Finansy i Statistika (ed.), pp. 56-58;
USSR and Russia 1989: *Demografitcheskii ezjegonik SSSR 1990* (Demographic Yearbook of the USSR 1990), Moscow, 1991, Finansy i Statistika (ed.), p.107;
USSR and Russia 1990: *Demografitcheskii ezjegonik SSSR 1991* (Demographic Yearbook of the USSR 1991), Moscow, 1992, CIS Goskomstat, p. 59;
Russia 1991-92: unpublished data from the Russian Federation Goskomstat.

The events that have inflected the course of fertility in Russia are noted. Some landmarks of Russian and Soviet history which are susceptible of having had a demographic impact are given in the inset p. 4.

Between the beginning of the century and the First World War, the agrarian reforms of Petr Stolypin, adopted in Autumn 1906, gave peasants the right to choose their residence and trade. In doing so, these reforms closed the door once and for all to feudalism. Together with the emergence of industrial capitalism, they created the conditions required for the demographic transition. Fertility fell by some 10% between 1901-5 and 1911-3 (Figure 2).

The precipitous drop in birth rates during the First World War (more than halved) gives an idea of the extent of the tragedy: 18.5 million men were called up, 690,000 died on the battle-fields between 1914 and 1917, a further 970,000 in hospital from their wounds and 156,000 from infectious diseases. More than five million were taken prisoner, of whom 182,000 died and 3,400,000 were still in captivity outside Russia in 1918. The natality level did not start to pick up again until 1920, and the births prevented by the war were never really made up.

In the late 1920s and 1930s, Russia's social structure was disrupted. During the years of the NEP (1922-7), Russian society remained essentially a peasant one, with a traditional economic structure. The distribution of land had allowed some peasants to grow rich (*kulaks*) and to hold a dominant position in the *mir*, which was recognized by the Rural Code of 1922. There was a particularly close link between the size of the family, its labour force and the development of means of production, as shown by a study conducted in 1927[4]: the more working-age members a family had, the richer it could become. The maintenance of this traditional structure acted as a brake on the economic development of agriculture and on industrialization.

The 'de-kulakization' and forced collectivization which began in 1928 opened up a new era in the social development of the Soviet Union and marked a complete break with the past. In the space of a few years, peasants massively turned into *kolkhozniks*: in 1928, 75% of the working population were own-account farmers and craftsmen and 3% were members of a kolkhoz or cooperative, whereas in 1939, there were no more than 3% of own-account farmers and 47% were members of a kolkhoz or cooperative. During the same interval, the proportion of manual workers rose from 18% to 50%[5].

The short-term demographic consequences of this sharp transition in Russia's social history are difficult to assess, for want of sufficiently detailed statistics. More importantly, the famine of 1932-3 and, above all, the Second World War were such major crises that they obscure the image, making it difficult to discern what might be behavioural change from what is strictly period effect. The banning of abortion in 1936 further clouds the issue. We can add that the rapid development of health care services and vaccination programmes, as well as better sanitation in the towns, reduced infant mortality, and this may in turn have contributed to reducing fertility.

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[4] *Statistitcheskii spravotchnik SSSR za 1928* (Statistics of the USSR 1928), Moscow, 1929, Statistika (ed.) p.115.

[5] *Narodnoie khoziaistvo SSSR 1922-1982* (The economy of the USSR 1922-1982), Moscow, 1982, Finansy i statistika, p.30.

For the population of the Soviet Union, the Second World War was a cataclysm. In the space of four years, 35 million men were called up, of whom 30 million were mobilized, and 600,000 women took part in the military operations. The losses are estimated overall at between 27 and 28 million. The number of births was cut by half, reaching its lowest point in 1942-3. The demobilization took three years, which delayed any catching up on lost time until the beginning of the 1950s.

From Krushchev to Gorbachev The death of Stalin in 1953, the Twentieth Party Congress in 1956 and the campaign against the 'personality cult' profoundly affected life in the Soviet Union, but do not appear to have had any directly perceptible impact on natality.

However, the transformation of Russian society continued. In the countryside, Krushchev was sweeping away the last traces of family economy, and city suburbs were emerging, which very rapidly could not keep pace with their population growth. A chronic housing shortage paradoxically resulted in earlier marriage and parenthood: it was necessary to waste no time in starting a family, to stand a chance of having one's own home by the age of 30.

The three decades from the end of the 1950s to the end of the 1980s were a relatively calm period in modern Russian history. But there were substantial changes in fertility, as we can see from the trends in the period total fertility rate (TFR) and the mean age at childbearing (Figures 3a and 3b). The fact that the detailed data necessary to calculate these measures become available from 1959 on is also a sign of the times.

The period TFRs start to fall rapidly in 1961, from 2.6 down to 2 children per woman in 1968 (Table 1 and Figure 3a). After levelling off for a few years, they then decrease much more slowly until 1980, down to 1.86. The only noteable event during this period was the promulgation in 1974 of a law awarding an allowance for all families with young children (under-12s) and a monthly per capita income below 50 roubles. The beneficiaries were primarily rural families, incomes being very low in the countryside. The urban beneficiaries were mostly students (grants for higher education were then between 35 and 50 roubles per month).

After 1980, a turnaround is observed in TFR, which becomes more marked as the family policy measures implemented in the early 1980s start to bear fruit. But the values again start to fall in 1987, and by 1993 have dropped to a level of 1.3.

Mean age at childbearing – the mean age of the fertility schedule, thus linked to TFR – has fallen spectacularly: from 28.2 to 25.7 in the space of 20 years (from 1959 to 1980); after a short pause, it continues on down to 24.9 years in 1992. The fall has been more rapid in the countryside, so that, after being higher until the early 1980s, the rural values then fall below the urban ones.

TABLE 1. – PERIOD TOTAL FERTILITY RATES AND MEAN AGE AT CHILDBEARING IN RUSSIA

Year	Total fertility rate			Mean age at childbearing*			Standard deviation of age at childbearing*		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
1959	2.029	3.337	2.582	27.570	28.598	28.160	5.565	6.288	6.013
1960	2.060	3.259	2.560	27.533	28.601	28.117	5.564	6.254	5.990
1961	2.042	3.082	2.467	27.081	28.294	27.718	5.543	6.247	5.963
1962	1.975	2.921	2.355	26.998	28.340	27.686	5.528	6.236	5.947
1963	1.933	2.874	2.302	26.772	28.189	27.492	5.504	6.237	5.937
1964	1.880	2.664	2.181	26.680	28.201	27.422	5.494	6.254	5.932
1965	1.824	2.583	2.108	26.665	28.244	27.424	5.469	6.251	5.918
1966	1.854	2.579	2.119	26.593	28.230	27.359	5.417	6.235	5.880
1967	1.786	2.461	2.025	26.561	28.041	27.244	5.383	6.221	5.838
1968	1.750	2.438	1.984	26.551	27.923	27.186	5.378	6.203	5.819
1969	1.776	2.440	1.990	26.514	27.688	27.054	5.363	6.151	5.768
1970	1.772	2.518	1.996	26.425	27.344	26.873	5.358	6.118	5.744
1971	1.795	2.603	2.024	26.415	27.092	26.768	5.358	6.037	5.698
1972	1.814	2.589	2.027	26.398	27.009	26.714	5.339	6.067	5.688
1973	1.752	2.550	1.962	26.351	26.877	26.629	5.354	6.035	5.679
1974	1.779	2.633	1.996	26.239	26.721	26.490	5.328	5.998	5.646
1975	1.757	2.635	1.973	26.135	26.609	26.369	5.293	5.948	5.599
1976	1.744	2.622	1.956	25.981	26.445	26.194	5.238	5.883	5.531
1977	1.716	2.580	1.922	25.895	26.360	26.089	5.198	5.850	5.483
1978	1.703	2.554	1.902	25.810	26.124	25.945	5.148	5.811	5.416
1979	1.669	2.542	1.868	25.698	25.883	25.790	5.128	5.777	5.378
1980	1.678	2.506	1.865	25.624	25.702	25.672	5.099	5.657	5.305
1981	1.689	2.553	1.884	25.700	25.805	25.740	5.107	5.602	5.286
1982	1.761	2.632	1.959	25.802	25.860	25.811	5.145	5.546	5.286
1983	1.891	2.763	2.090	25.936	25.928	25.916	5.149	5.509	5.267
1984	1.862	2.690	2.052	25.826	25.804	25.796	5.176	5.522	5.280
1985	1.865	2.675	2.051	25.803	25.816	25.782	5.182	5.579	5.294
1986	1.984	2.833	2.177	26.001	26.004	25.980	5.260	5.678	5.370
1987	2.039	2.884	2.228	26.009	25.953	25.979	5.316	5.729	5.420
1988	1.957	2.801	2.142	25.852	25.669	25.802	5.309	5.715	5.405
1989	1.830	2.747	2.026	25.580	25.289	25.512	5.285	5.605	5.360
1990	1.707	2.654	1.908	25.311	24.984	25.237	5.271	5.535	5.334
1991	1.543	2.465	1.744	25.100	24.789	25.028	5.253	5.511	5.316
1992	1.358	2.238	1.556	24.941	24.617	24.855	5.223	5.411	5.272
1993			1.3						

* Calculated from age-specific fertility rates.

This first outline indicates how we shall approach the study of present-day Russian fertility: by attempting to isolate the long-term trends, and to analyse recent developments in the light of the impact of the family policy measures adopted in 1981.

Where necessary, we shall examine urban and rural fertility separately[6]. Figure 3 shows the extent of the differential: in terms of level,

[6] According to the Russian Federation's administrative definition, the urban population consists of people living in: localities with a population of 12,000 and more of whom 85% in non-agricultural households; 'workers' villages' of 3,000 to 12,000; and small 'health complexes'.

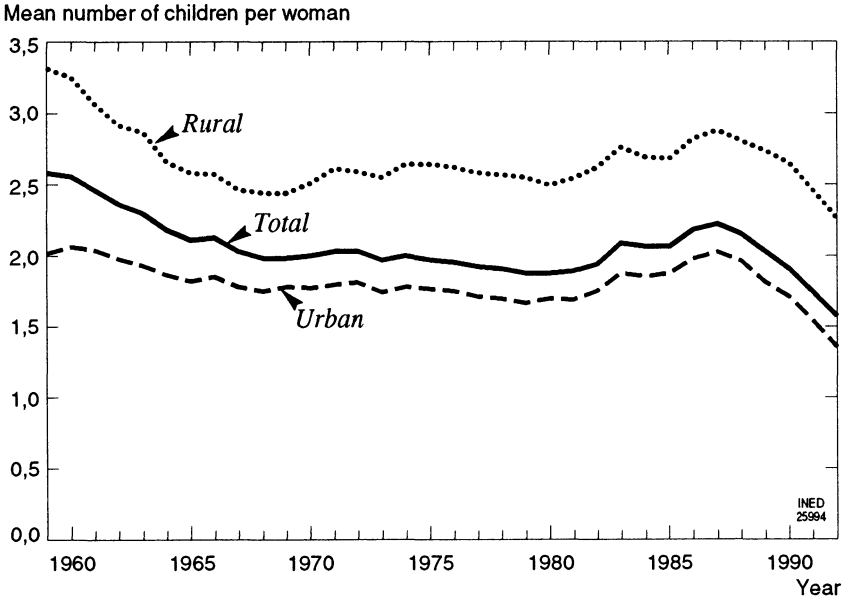


Figure 3a. – Total fertility rates

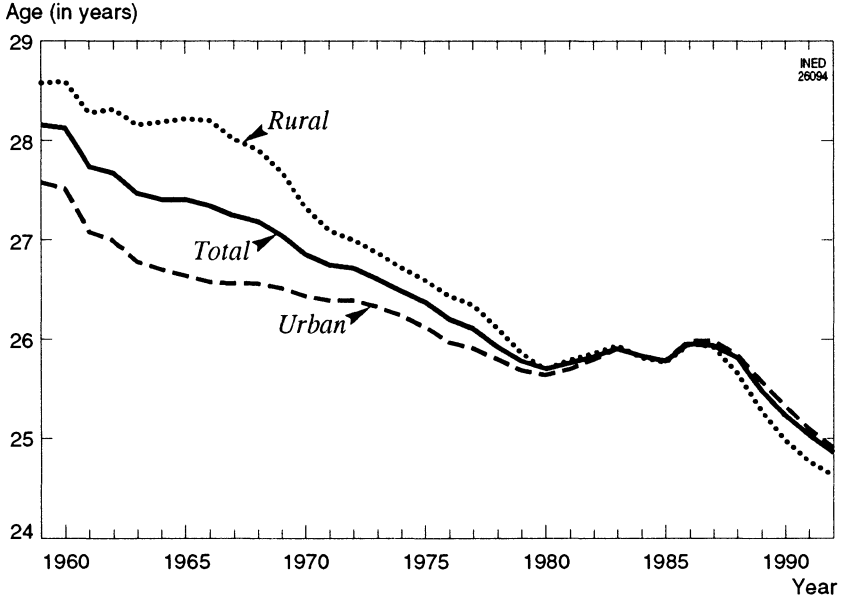


Figure 3b. – Mean age at childbearing

TABLE 2. – COMPLETED FERTILITY OF BIRTH COHORTS, CALCULATED FROM DIFFERENT SOURCES

	Rural					Urban					Total				
	1979 census	1989 census	1979 cens. + registr.	1989 cens. + registr.	Civil reg.	1979 census	1989 census	1979 cens. + registr.	1989 cens. + registr.	Civil reg.	1979 census	1989 census	1979 cens. + registr.	1989 cens. + registr.	Civil reg.
1909-1913	3.35					2.67					2.95				
1914-1918	3.01					2.32					2.59				
1919-1923	2.82	2.88				1.96	2.02				2.27	2.28			
1924	2.88					1.91					2.25				
1925	2.88					1.90					2.23				
1926	2.88	2.93				1.90	1.94				2.23	2.24			
1927	2.88					1.88					2.22				
1928	2.90					1.87					2.22				
1929	2.86					1.85					2.19				
1930	2.87					1.83					2.19				
1931	2.87	2.94				1.81	1.84				2.15	2.18	2.15		
1932	2.91					1.80					2.17		2.13		
1933		2.93	2.93					1.79					2.10		
1934		3.00	2.93				1.80	1.78				2.14	2.07		
1935		2.92	2.88				1.79	1.77				2.11	1.97		
1936		2.90	2.84				1.77	1.75				2.08	1.98		
1937		2.83	2.76				1.71	1.69				1.99	1.96		
1938		2.79	2.74				1.71	1.69				1.98	1.97		
1939		2.76	2.71				1.71	1.69				1.97	1.93		

	Rural					Urban					Total				
	1979 census	1989 census	1979 cens. + registr.	1989 cens. + registr.	Civil reg.	1979 census	1989 census	1979 cens. + registr.	1989 cens. + registr.	Civil reg.	1979 census	1989 census	1979 cens. + registr.	1989 cens. + registr.	Civil reg.
1940		2.76	2.71				1.71	1.70				1.98	1.96		
1941		2.67	2.64				1.70	1.68				1.94	1.90		
1942		2.77	2.69				1.71	1.69				1.97	1.84		
1943			2.64	2.72	2.11			1.66	1.68	1.62			1.80	1.92	1.76
1944			2.60	2.66	2.22			1.63	1.65	1.68			1.82	1.84	1.82
1945			2.54	2.60	2.21			1.62	1.64	1.64			1.80	1.81	1.78
1946			2.49	2.55	2.24			1.65	1.66	1.73			1.82	1.83	1.85
1947			2.46	2.53	2.14			1.64	1.67	1.66			1.81	1.83	1.77
1948			2.43	2.49	2.22			1.66	1.68	1.65			1.82	1.84	1.79
1949			2.46	2.51	2.37			1.71	1.72	1.76			1.87	1.88	1.90
1950			2.45	2.52	2.36			1.71	1.73	1.70			1.87	1.89	1.85
1951			2.46	2.56	2.43			1.73	1.75	1.73			1.89	1.91	1.89
1952			2.44	2.51	2.42			1.73	1.77	1.72			1.89	1.92	1.88
1953			2.43	2.51	2.43			1.73	1.77	1.70			1.89	1.92	1.87
1954			2.45	2.50	2.45			1.75	1.78	1.73			1.91	1.93	1.89
1955			2.45	2.47	2.44			1.74	1.77	1.73			1.91	1.92	1.89

Sources:
Cens.: Census data.
Civil reg.: Civil registration data.
Cens. + registr.: Census data completed by civil registration data.

two separate Russias exist; however, the similarity of the trends shows that common factors are at work.

II. – The emergence of a new Russian family model

The limited civil registration and census data curtail the observation of cohort fertility trends. We have only the data extracted from the 1979 and 1989 censuses (which contained one question, for women, on number of children ever born) and registration data permitting the calculation of age-specific fertility rates from 1959 on. Completed fertility levels are available only as from cohorts born on the eve of the First World War. They can be either observed directly from the 1979 census (women born in 1909-32) and the 1989 census (women born in 1919-42) alone, or completed with registration data (cohorts 1933 on), or they can be calculated from registration data alone (cohorts 1943 on)[7].

The cohortwise decrease in completed fertility

The completed cohort fertility (CCF) values drawn from these different sources are shown in Table 2. Broadly speaking, there is consistency between those calculated from the 1979 and from the 1989 censuses, especially for the total population. But the CCF values calculated from the registration data alone are in some cases quite different from those derived from the census-plus-registration data. This concerns more particularly the rural population and cohorts 1943-50, where the deviation amounts to between 20% and 4%. For all Russia, on the other hand, consistency between the different sources is satisfactory.

The significance of the results for the urban and rural populations is somewhat different, depending on whether they were obtained from the retrospective census data or whether vital statistics were used.

For the rural population, the retrospective data concern women still living in the countryside at least to the time of the census. Their fertility can be supposed higher than that of women having left the countryside. Given that this population results from a selection, the CCF values thus derived can be taken to reflect rural fertility *par excellence*. Those calculated from vital statistics refer to a more heterogeneous population: higher-fertility women who will stay in the countryside, and lower-fertility women who will leave, which explains that the values are always lower. The discrepancy between the two sources may be larger in cohorts 1943-50 because rural-urban migration has been particularly high among these women.

For the urban population, the retrospective census data concern women who have always lived in towns or who have come to live there.

[7] The detailed data for all Russia are given in the Appendix. The corresponding urban and rural series are available from the authors.

The above selection effect does not therefore apply. The CCF values obtained by using the census data represent an *average* urban fertility, and do not differ much from those calculated from vital statistics. The women who have lived in towns throughout their reproductive lives no doubt have lower fertility than this urban average.

In view of these considerations, we selected, among the different data sets, the following 'reference' series: the CCF values calculated from the 1979 census, for cohorts 1909-32, from the 1989 census, for cohorts 1933-42, and from the combination of 1989 census and registration data for cohorts 1943-55. The women in the latter group of cohorts were aged between 49 and 37 in 1992. To estimate their completed fertility at age 50, we repeated the age-specific rates observed in 1992 ('frozen' rates).

In Figure 4, we show the cohort trends in completed fertility for women born between 1909 and 1955 (i.e. reproductive lives begun essentially in the 1930s), by urban and rural residence.

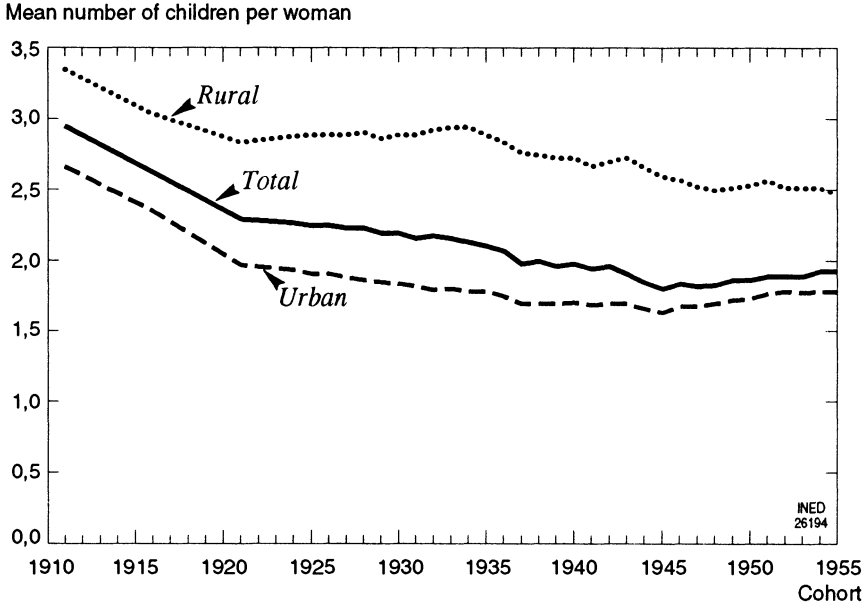


Figure 4. – Completed cohort fertility
(Mean number of children per woman)

In town and countryside alike, the women born at the beginning of the century are those who put a term to the demographic transition. Fertility drops sharply in the space of a few cohorts: women born just before the First World War have had an average of 2.7 children in the towns and 3.4 in the countryside, those born just after it only 2 and 2.8 respectively.

The abruptness of this fall can be explained to a large extent by the impact of the Second World War on fertility behaviour. The women born around 1910 had already had most of their children by the time war broke out in 1941. Those born ten years later were twenty-year-olds and the consequences on family formation were much greater for them.

Among the cohorts born from the mid-1920s on, whose reproductive lives started after the war, the level of urban fertility falls progressively up to cohort 1945, while that of rural fertility first stabilizes (or even rises slightly) and then falls sharply up to cohort 1948. In fact, fertility decreased more in ten cohorts in the countryside than in twenty in the towns. The speed of this change can no doubt be related to the transformation of rural life starting in the mid-1950s.

For urban women, the fall in CCF ends with cohort 1945 (1.6 children per woman), and for rural women, with cohort 1948 (2.4). For all Russia, the lowest level to date has been that of women born in 1945: 1.8 children.

The subsequent rise in urban fertility (women born from 1946 on) is slight: in the region of 0.15 children per woman in the space of ten cohorts. Rural fertility has not risen again. Ultimately, women born in 1955 will doubtless have no more than 1.8 (perhaps even 1.7) children in the towns and no less than 2.4 (or barely less) in the countryside. Completed cohort fertility for all Russia thus amounts to 1.9 children per woman in cohort 1955, the last that can be estimated with a reasonable risk of error.

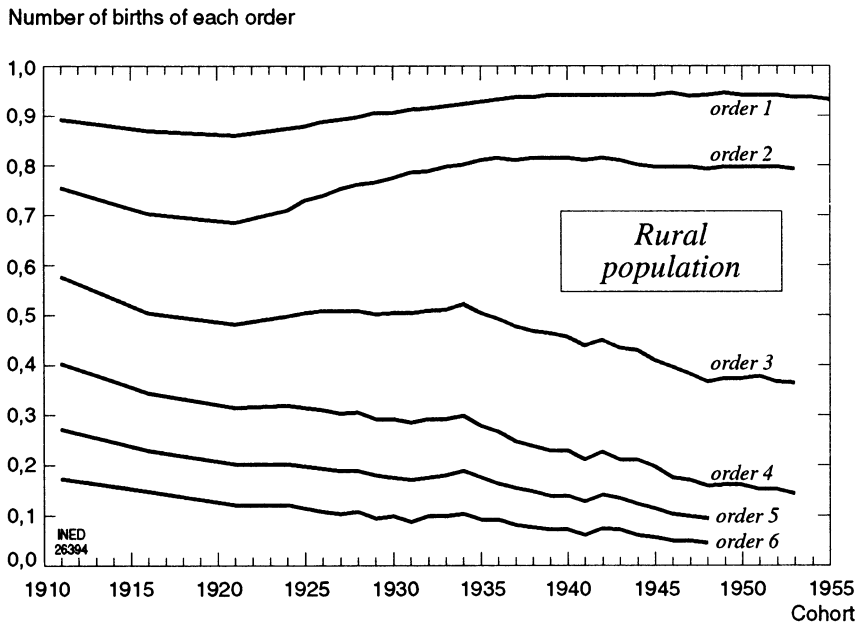
The disappearance of large families

This evolution is the result of considerable changes in family composition. These can be examined in the light of the 1979 and 1989 census data on number of children ever born, from which it is possible to calculate not only the parity distribution of women in successive cohorts, but also parity progression ratios and mean number of births of each order[8].

Figure 5 illustrates the order-specific completed fertility curves for cohorts 1909 to 1955. This breakdown by birth order is very meaningful for understanding the general fertility trends.

Among both rural and urban residents, the very rapid decline observed across cohorts born during the first two decades concerns all birth orders, but to varying degrees. Schematically, the higher the birth order, the greater the reduction, as we can see from Table 3a. First births barely change, and second births decline only moderately (–13% for the whole of Russia); the pattern is very similar in the urban and rural populations. Women born at the beginning of the 1920s, who, we remember, were about twenty when war broke out, have had almost as many first and second births (1.5 in all) as those born ten years earlier (1.6). Considering the difficult conditions reigning at the start of their family formation years (the wartime

[8] The mean number of births of order i is equal to the product of the parity progression ratios from 0 to i–1.



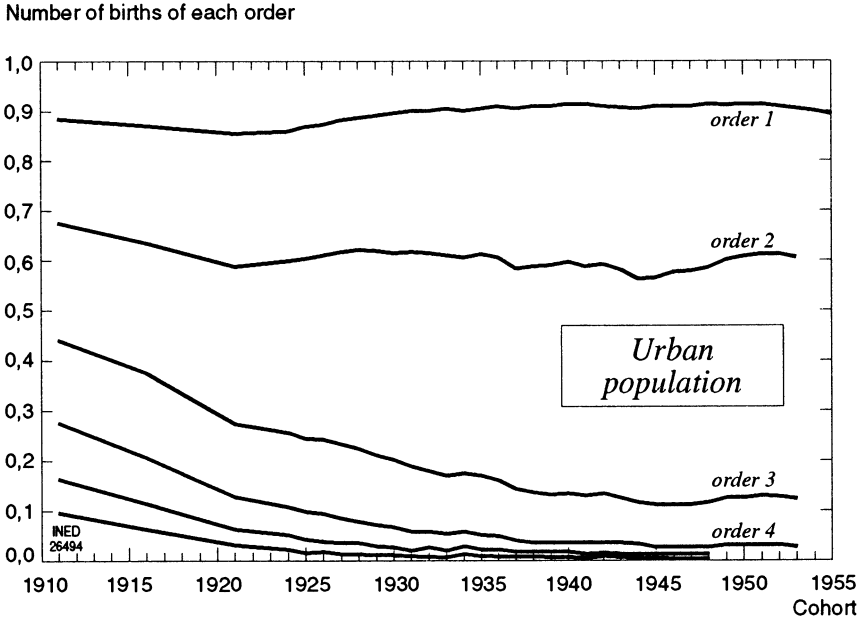


Figure 5. – Mean number of births of each order, per woman

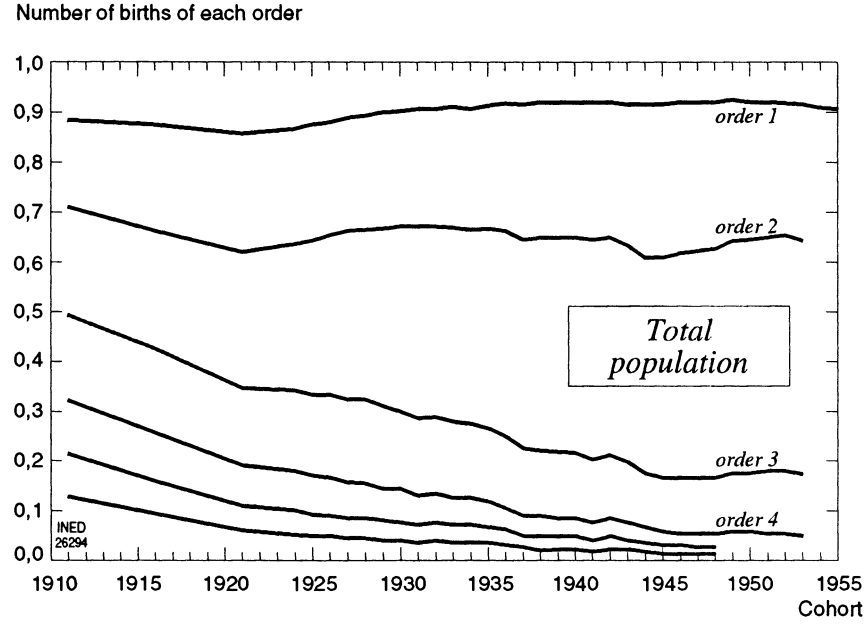


Figure 5. – cont.

birth rates give an idea of this), there must have been a lot of 'catching-up' afterwards.

For births of third and higher orders, the differences between the urban and rural sectors are substantial. They are already clear among women born in the early 1910s: 1.7 births in all for the countryside, versus 1.1 in the towns. The gap then becomes wider with the sharp drop in urban fertility of orders 4+ (more than 60%). Within ten cohorts, the mean number of births of orders 3 and higher is halved in the towns, while losing only 25% in the countryside. Thus, urban women born at the beginning of the 1920s had fewer births of orders 3+ (0.53 in all) than second births (0.59), whereas their rural sisters had almost twice as many (1.28 and 0.69 respectively). We can remark that the impact of the Second World War would have been stronger, for these births, among the older women: those born in 1910 were about thirty in 1941, an age when they would be entering the higher orders.

Across the following 20 cohorts (women born roughly from 1925 to 1945), fertility of orders 3 and higher continues to fall (Table 3b) before finally stabilizing. These women have spent their reproductive years mostly after the Second World War, and in a context of widespread rural-urban migration. Consequently, the weight of urban fertility in total fertility has increased.

TABLE 3a. – BIRTH ORDER COMPONENTS OF COMPLETED FERTILITY, COHORTS 1909-13 AND 1919-23 (MEAN NUMBER OF BIRTHS PER WOMAN)

Total population	Cohort		Deviation	
	1909-13	1919-23	Absolute	Percentage
Birth order 1	0.88	0.86	– 0.02	– 2
Birth order 2	0.71	0.62	– 0.09	– 13
Birth order 3	0.50	0.35	– 0.15	– 30
Birth order 4	0.33	0.19	– 0.14	– 42
Birth orders 5+	0.52	0.24	– 0.28	– 54
Births of all orders	2.95	2.27	– 0.68	– 23
Rural population	Cohort		Deviation	
	1909-13	1919-23	Absolute	Percentage
Birth order 1	0.89	0.86	– 0.03	– 3
Birth order 2	0.76	0.69	– 0.07	– 9
Birth order 3	0.58	0.48	– 0.10	– 17
Birth order 4	0.41	0.32	– 0.09	– 22
Birth orders 5+	0.71	0.48	– 0.23	– 32
Births of all orders	3.35	2.82	– 0.53	– 16
Urban population	Cohort		Deviation	
	1909-13	1919-23	Absolute	Percentage
Birth order 1	0.89	0.86	– 0.03	– 3
Birth order 2	0.68	0.59	– 0.09	– 13
Birth order 3	0.44	0.28	– 0.16	– 36
Birth order 4	0.27	0.13	– 0.14	– 52
Birth orders 5+	0.39	0.12	– 0.27	– 69
Births of all orders	2.67	1.96	– 0.71	– 27

Note: Due to rounding and to the method of calculation, "births of all orders" may differ from the sum of the different components.

In the towns, third births become more and more rare: their frequency is halved from c. 1925 to c. 1945 (0.25 to 0.11 children per woman). At the same time, births of higher orders virtually disappear, counting for only 0.05 in c. 1945.

Rural fertility also decreases sharply at orders 4+ (losing roughly 40%), but third births resist, falling by only 18%. A closer look at the timing of this movement (Figure 5) shows that the fertility decline at orders 3+ starts later in the countryside, with c. 1935. On the contrary, it is strongest in the towns among women born up to the later 1930s, then levels off.

Globally, the gap between urban and rural fertility has grown markedly over these cohorts. In c. 1925, rural women had about four times as many higher-order births as urban women (0.77 and 0.18 births of orders 3+), in c. 1945 nine times more (0.46 and 0.05)!

In this context, the increase of first births (+6% for all Russia) and of second births in the countryside (+10%) is very meaningful. The mean

TABLE 3b. – BIRTH ORDER COMPONENTS OF COMPLETED FERTILITY, COHORTS 1925 AND 1945 (MEAN NUMBER OF BIRTHS PER WOMAN)

Total population	Cohort		Deviation	
	1925	1945	Absolute	Percentage
Birth order 1	0.87	0.92	+ 0.05	6
Birth order 2	0.65	0.61	– 0.04	– 6
Birth order 3	0.34	0.16	– 0.18	– 53
Birth order 4	0.17	0.06	– 0.11	– 65
Birth orders 5+	0.20	0.07	– 0.13	– 65
Births of all orders	2.23	1.81	– 0.42	– 19
Rural population	Cohort		Deviation	
	1925	1945	Absolute	Percentage
Birth order 1	0.88	0.94	0.06	7
Birth order 2	0.73	0.80	0.07	10
Birth order 3	0.50	0.41	– 0.09	– 18
Birth order 4	0.32	0.20	– 0.12	– 38
Birth orders 5+	0.45	0.26	– 0.19	– 42
Births of all orders	2.88	2.61	– 0.27	– 9 %
Urban population	Cohort		Deviation	
	1945	1945	Absolute	Percentage
Birth order 1	0.87	0.91	0.04	5
Birth order 2	0.60	0.57	– 0.03	– 5
Birth order 3	0.25	0.11	– 0.14	– 56
Birth order 4	0.10	0.03	– 0.07	– 70
Birth orders 5+	0.08	0.02	– 0.06	– 75
Births of all orders	1.90	1.62	– 0.28	– 15
Note : See Table 3a.				

number of first births per woman in c. 1945, 0.92 for the whole population (and slightly more for the rural), which is no doubt a sign of improved health conditions, is practically – given infecundity – the highest level possible.

From diversity to a standard family model

Parity progression ratios permit us to complete this description of order-specific fertility trends by measuring propensity to have another child, by number of children already borne. The measures considered above, expressed in mean numbers of children of a given birth order, give a global image of fertility achieved up to a particular birth order. It may be useful to separate the different family building blocks, that is, to consider step by step the transition from one family size to the next.

Figure 6, which shows parity progression ratios among urban and rural women born in 1909-13 and 1945, illustrates the scale of the transformation of the Russian family.

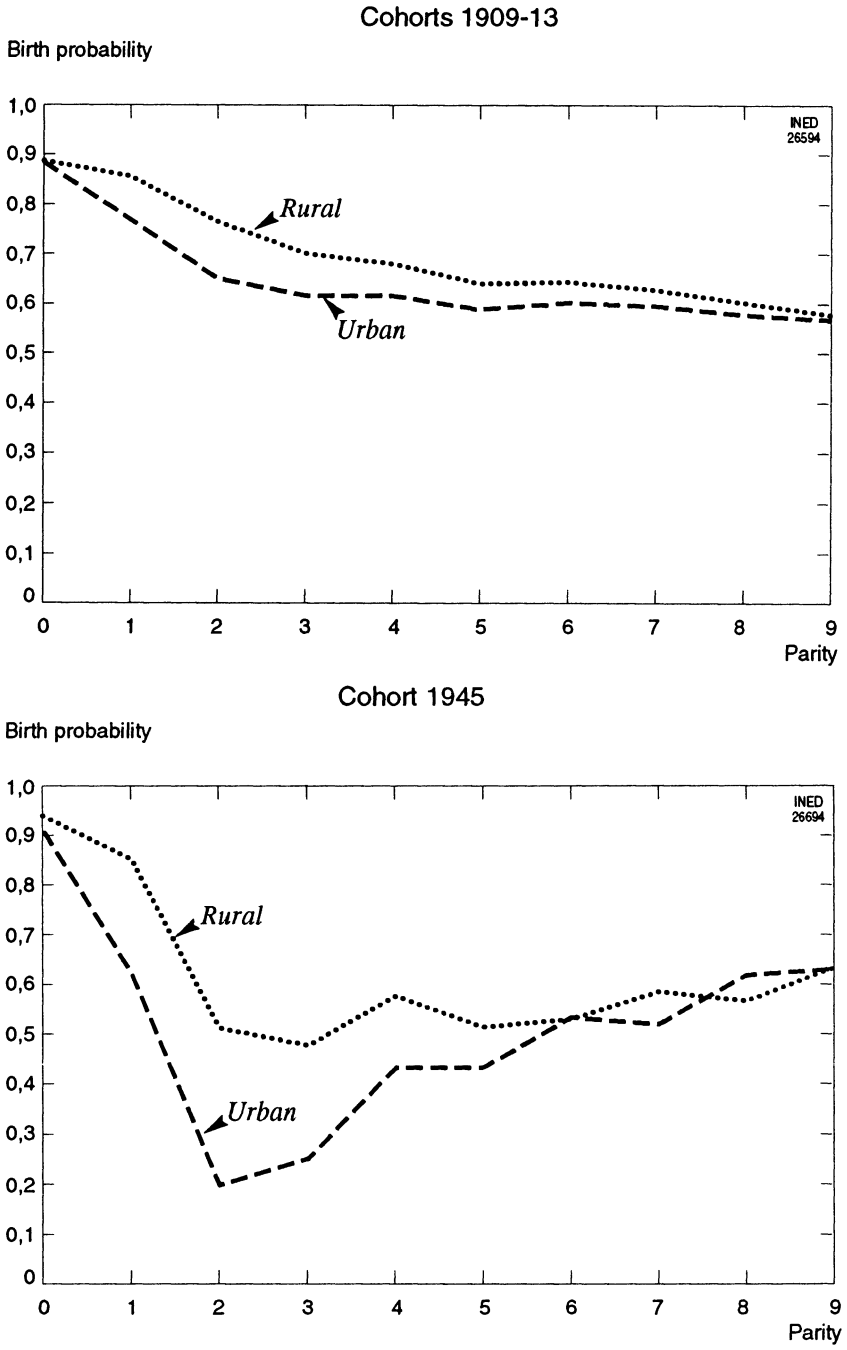


Figure 6. – Parity progression ratios

In cc. 1909-13, and, more generally, for women born in the first quarter of this century, the probability of having another child decreases with the number already borne: about eight out of ten mothers-of-one went on to have a second child, but only six out of ten mothers-of-five had a sixth. The decrease is more rapid in the early family stages, particularly in towns, then slows down. This pattern is one of transition: manifestly, a substantial proportion of Russian women, urban but also rural, used birth control (otherwise the parity progression ratios would be higher), but this practise (reflected, inversely, in these ratios) was relatively diffuse. It is practically inexistent (rural) or very slight (urban) for the first two children, becomes more pronounced with the third, then more or less maintains this level. This pattern suggests the following remarks:

— for these cohorts, particularly those living in the countryside, a family meant at least two children;

— a sizeable proportion, 30%, of parity-2 women did not have a third child; in most cases, this was voluntary;

— among those who did go on after the second birth, there is great diversity: the probability of stopping is approximately the same after three, four, five children or more. This is particularly the case in the urban population, where parity progression ratios are virtually constant from the third birth on.

For women born in 1945, the pattern is very different. The parity progression ratios fall only up to the birth of the second child, and then rise. In the countryside, the proportion of mothers-of-two remains high, but half have stopped at that point. In the towns, many have had only one child (40%) and of those who have had two, eight out of ten have not had a third.

The rise in parity progression ratios after the second child, which is very marked in the urban sector, suggests the persistence of small, highly fertile social groups that are formed by successive selections: the fewer women there are who have a third, fourth or further child, the more fertile are those who have gone past this selection 'barrier'.

In the space of thirty birth cohorts, Russian society has thus changed from a great *diversity* of family size, particularly in the countryside, to a *standard* family model – the one or two child family – with a rural variant (three children). Four-child families have practically disappeared from the urban landscape, and are few and far between in the countryside.

Figures 7a to 7f, which show the parity distributions of the same cohorts, illustrate this transformation.

The emergence of the one or two child family is spectacular: it accounts for seven out of ten women in c. 1945, compared to four out of ten 30 cohorts earlier. Just as remarkable is the disappearance of large families: whereas one out of three women in cc. 1909-13 had four children or more, only one in thirteen had in c. 1945.

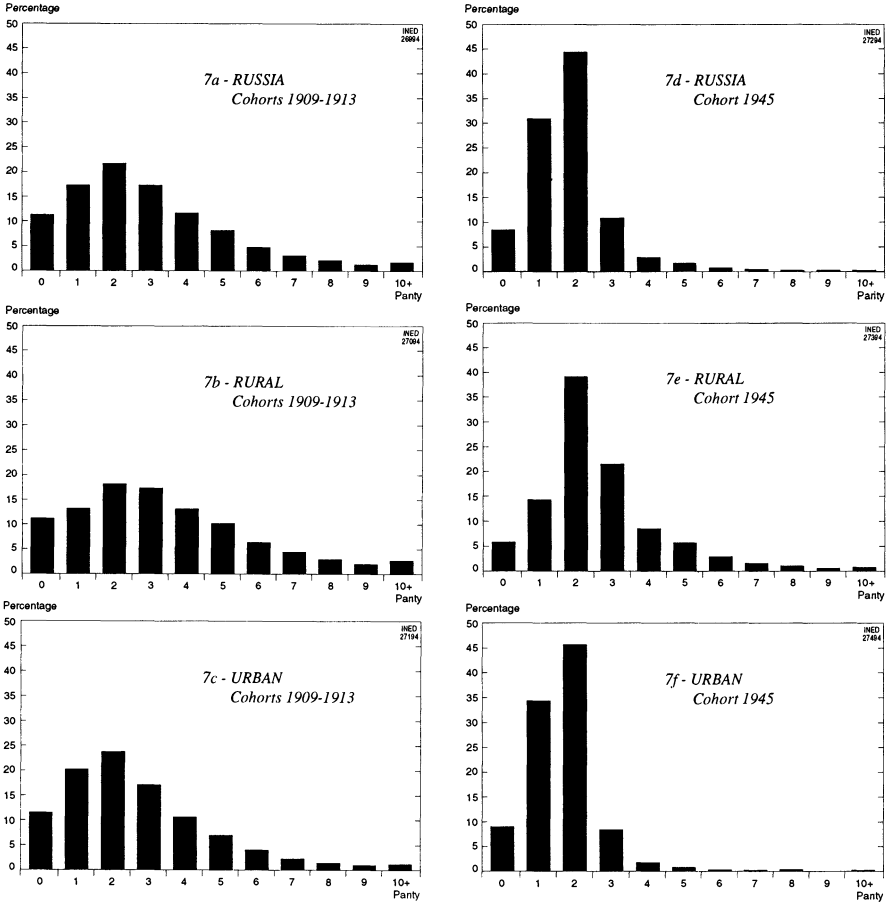


Figure 7. – Parity distributions

We note one feature which is characteristic of Russian fertility: the very low proportions childless, which are observed from the start, less than 9% (with a minimum of 7.7% in c. 1940), and persist through to c. 1954. This corresponds roughly to the level of infecundity, in other words, all the women capable of giving birth do so. The refusal to have children is a phenomenon unknown as yet in Russia[9].

Earlier fertility timing These radical changes in Russian family size have gone together with changes in fertility timing. Unfortunately, these cannot be described in detail. Mean age at childbearing could only be calculated for a few birth cohorts: in most cases, the lack of age-specific data prior to 1959, or simply the fact that the reproductive years were not over, did not permit estimation.

Instead, for the older cohorts, for whom age-specific data were lacking for the early childbearing years, we calculated the proportion of births borne before and after the age reached by these cohorts in 1959, when detailed registration data started to be collected. The table below gives the proportion for c. 1930 and compares it to c. 1945.

Birth cohort	Proportion of births by the age of 30	
	Rural	Urban
1930	36%	70%
1945	76%	77%

These results are approximate (the registration and census data do not tally completely), but the general trend is obvious: the proportion of family size achieved by the age of 30 has increased cohortwise. This tempo change is particularly marked in the rural sector, where the women born in 1945 had a proportion of births twice as high by this age as those born in 1930. It can, no doubt, be explained largely by the reduction of fertility quantum, given that this was due essentially to the fall in births of third and higher orders, that occur at relatively older ages.

Starting with c. 1945, and up to c. 1955, we have the age-specific fertility rates required to calculate mean ages at childbearing (Table 4).

After rising slightly through the cohorts born in the second half of the 1940s, mean age at childbearing then tends to fall, particularly in the countryside where it loses almost one year between c. 1946 and c. 1955: a moderate decrease, but sufficient for childbearing to become earlier there than in the towns. The gap is small (0.05 years in c. 1955), but it should be borne in mind that there is a sizeable difference in completed family

[9] However, the extremely high first-birth frequencies reported in the countryside may raise doubts about the quality of the data. The observations available do not permit investigation of this point.

TABLE 4. – MEAN AGE AT CHILDBEARING IN COHORTS 1945-1955

Birth cohort	Urban	Rural	Total
1945	25.94	26.67	26.07
1946	26.05	26.73	26.18
1947	26.07	26.72	26.20
1948	26.20	26.64	26.27
1949	26.11	26.52	26.18
1950	26.16	26.46	26.20
1951	26.18	26.32	26.18
1952	26.15	26.17	26.13
1953	26.11	26.07	26.07
1954	26.01	25.96	25.98
1955	25.90	25.85	25.87

size between urban (1.77 children) and rural (2.47) women. Higher fertility tends to 'push up' mean age at childbearing, and fact that this is on the contrary lower for rural women deserves our attention.

With regard to women born after 1955, it was necessary to take a close look at their age-specific fertility rates to see whether these timing changes were continuing. This examination confirmed that they are, and also that, in the rural and urban populations alike, the drop in mean age at childbearing is not simply the effect of smaller family size, but reveals ongoing changes in fertility behaviour.

The age-specific fertility rates of women born in 1945, 1955, 1960, 1965 and 1970 are shown in Figures 8a (absolute values) and 8b (relative values). Fertility in the early reproductive years has risen remarkably, among young girls as well as young women.

Among urban adolescents, the fertility rates are two to three times higher in cc. 1960-70 than in c. 1945. In the countryside, this phenomenon has emerged later, but is just as strong. The rates are low at these ages, but the regularity and pace of their progression leaves no doubt that there is a trend towards earlier family formation.

Among young women, up to about the age of 25, fertility rates have also risen – a little more moderately, but the level is already high at these ages. In the countryside, the rate at age 20 has doubled between c. 1945 and c. 1970. In the towns, the increase has been more modest, and marks a pause with c. 1970.

These observations can be summed up in three remarks:

— fertility timing has grown notably earlier across cohorts born since the beginning of the century, and particularly in the countryside;

— in a first stage, up to women born in the early 1940s, this was principally the result of a drop in births of higher orders;

— but in cohorts born since the end of the 1940s, this factor is no longer involved, and a real change of fertility behaviour, towards increasingly early childbearing, is incontestable.

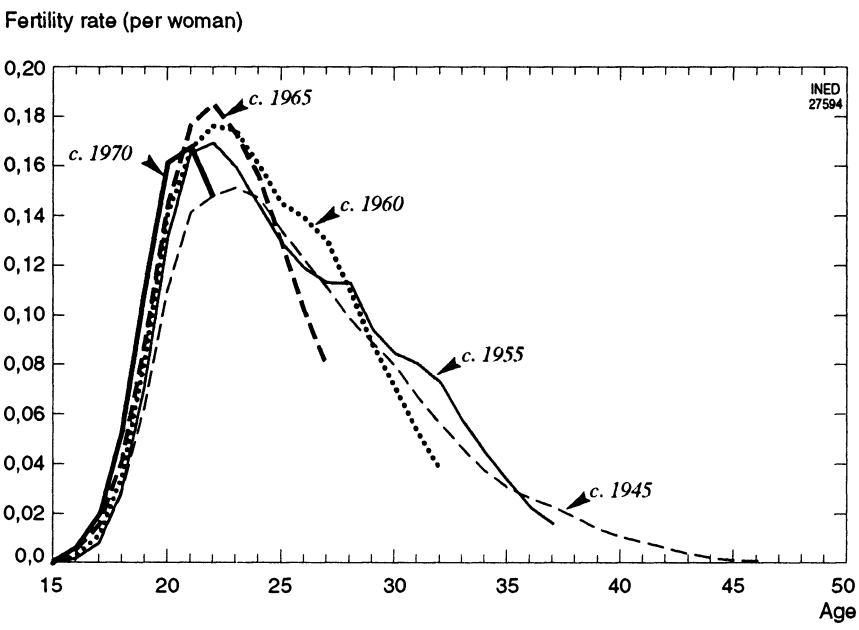


Figure 8a. – Age-specific fertility rates in selected cohorts, absolute values

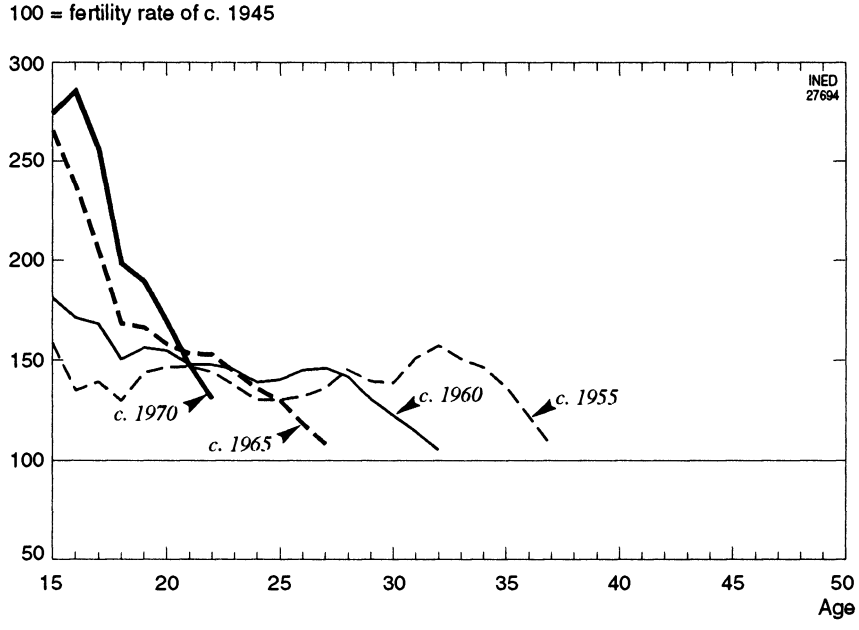


Figure 8b. – Age-specific fertility rates in selected cohorts, relative values (100 = cohort 1945)

It is this evolution in fertility timing that explains the very high TFR values observed at the end of the 1950s. Had there been no such changes, they would have been in the region of 2.1[10], that is, well below the observed values (2.6).

III. – Recent trends

Implementation of a pronatalist policy

During the 1970s, the politicians became aware of the need for a population policy, that is, for most of them, a pronatalist policy. This was the result of Russia's low fertility level: following a period of rapid decline, TFR had been below two children per woman since 1968. Already in 1966, population projections published by the Central Statistical Office had sounded the alarm: the population of the Soviet Union would continue to grow up to 1980, but not natural increase[11].

The need for a pronatalist policy was shown, by studies and reflections of various kinds, to be imperative. In 1971, the importance of population projections for long-term economic planning was stressed at the Twenty-Fourth Party Congress. At the following Congress, in 1976, the decision was taken to implement a population policy, which from the outset was a pronatalist policy. Indeed, it was at this Congress that the principle of a mother's leave with part pay up to the child's first birthday was adopted.

In January 1981, a decree[12] on "Measures to assist families with children" instituted a special allowance of 50 roubles for the birth of a first child and 100 roubles for a second or third child[13], or 30% and 60% of the then mean monthly wage of 170 roubles.

The same decree provided for eight-year interest-free loans for families with one child or more, if at least one spouse was younger than 30, and for loan rebates of 200 roubles after the birth of a second child and 300 roubles after a third.

Lastly, this decree stipulated that women were entitled to a one-year leave after having a baby, with a monthly allowance of 30 roubles (20% of the mean wage), and to a further leave of six months (later two years) without pay, but without breach of work contract and with the guarantee of returning to their former position.

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[10] Calculated supposing that the timing of fertility was constant in all cohorts.

[11] It was forecast that CBR would increase from 19.5 per 1,000 in 1964 to 21.3 in 1980, but that CDR would grow even faster because of population ageing (from 6.9 to 8.8 per 1,000), thus leaving natural increase at the same level of 12.5 per 1,000.

[12] Decree no. 235 of the Central Committee of the Soviet Union Communist Party and the Council of Ministers of the USSR, dated 22 January 1981.

[13] The allowances for fourth and further children, instituted in 1944, were maintained.

These measures in favour of mothers are the most substantial ones ever adopted in the Soviet Union; previously, women had to return to work six weeks after having a baby, or risk losing their job.

The impact of these measures on period fertility, as shown by the TFR values (Table 1), is all the more perceptible since the fall which had been ongoing since 1974 came to a halt in 1980. The period indicator began to rise as early as 1981, but the effect of the measures becomes clearest in 1982 and in 1983, when TFR exceeds the level of 2 children per woman to reach the values observed almost twenty years earlier. A two-year pause follows, then TFR starts to climb again, peaking at 2.2 children in 1987. The subsequent fall is precipitous: within five years, TFR loses 43%, an even sharper decline than in the early 1960s.

The cohort impact of the measures can be read in Figure 8b, which represents the age-specific fertility rates of a number of birth cohorts relative to c. 1945. Among women born in 1960 and 1965, who were under-30s in 1981, the increase, compared to those born in 1945, is in the region of 20%. In the older cohorts, the relative increase varies with age: the older they were, the greater the effect. We can suppose that anticipation (women gave birth a little earlier to a child they would have had anyway), which concerns the younger women, is more or less independent of age, while 'catching up' (women had a child they were unable to have earlier and might not have had otherwise), which is more the case of older women, becomes more frequent with age: the older the women, the more numerous the 'postponed' births, therefore the more frequent the catching-up process, in relative terms.

The effectiveness of the family policy measures should also be considered by going beyond the short-term fluctuations. We propose two possible approaches. First, a comparison of fertility in the cohorts susceptible of benefiting from these measures and in cohort 1945 (aged 36 in 1981, therefore practically not concerned). Women born in 1945 are, to date, the least fertile Russian birth cohort, and it was of interest to see whether the policy implemented in 1981 produced an upturn in later cohorts.

The second approach is a comparison of the observed cohort fertility and a hypothetical fertility that would be obtained if the pattern of the 1970s were repeated throughout the 1980s.

First approach

Figure 8a, in which we can compare the fertility rates observed in cc. 1945 and 1955, for instance, reveals the digressions in the latter resulting from the 1981 policy. These appear as two stages in a same process, being more an adjustment of fertility timing than a perceptible change in family size.

The figure also shows that the trend towards earlier childbearing discussed above had led to a significant rise in the fertility rates of c. 1955, *even before the measures were adopted in 1981.*

TABLE 5. – CUMULATIVE FERTILITY (PER WOMAN) OF COHORTS 1950, 1955 AND 1960 AT THE AGES REACHED IN 1981, 1987 AND 1992. COMPARISON WITH COHORT 1945

	Birth cohort		
	1950	1955	1960
Age in 1981	31	26	21
Cumulative fertility at this age	1.53	1.13	0.44
Cumulative fertility of c. 1945 at this age	1.50	1.06	0.36
Percentage deviation	*2.0*	*6.2*	*23.7*
Age in 1987	37	32	27
Cumulative fertility at this age	1.80	1.68	1.37
Cumulative fertility of c. 1945 at this age	1.72	1.56	1.17
Percentage deviation	*4.6*	*8.1*	*16.8*
Age en 1992	42	37	32
Cumulative fertility at this age	1.85	1.85	1.72
Cumulative fertility of c. 1945 at this age	1.77	1.72	1.56
Percentage deviation	*4.4*	*7.7*	*10.5*

In Table 5, we summarize these movements by comparing the cumulative fertility of cc. 1950, 1955 and 1960 to c. 1945 at the ages reached in 1981 (before the measures had been implemented), in 1987 (when their impact was maximal) and in 1992 (when the decline starting after 1987 had eaten into the previous gain).

In 1992, the cumulative fertility of cc. 1950, 1955 and 1960 exceeds by 4.4%, 7.7% and 10.5% respectively that of c. 1945. But these differences cannot be taken to reflect the pronatalist measures alone, since even before they were introduced, fertility was higher in these three cohorts than among women born in 1945. Taking into account these initial differences, we can put the excess fertility attributable to the new measures at 2.4% (4.4–2.0) in c. 1950 and 1.5% (7.7–6.2) in c. 1955. In c. 1960, the impact of the measures is so inextricably linked to earlier fertility timing that it is impossible to evaluate it.

Second approach

We can also compare the actual cohort fertility to a hypothetical fertility that would be observed in the cohorts had there been no pronatalist measures. To estimate this, we extrapolated the age-specific fertility trends of the 1970s, which was an easy task, given their almost linear pattern.

The effectiveness of the measures adopted in 1981 can then be judged by comparing the fertility levels actually observed in 1992 with those that

would be observed if fertility between 1980 and 1992 had followed the pattern in 1970-80. The results of this comparison are given in Table 6 for a number of birth cohorts.

TABLE 6. – OBSERVED AND HYPOTHETICAL FERTILITY OF SELECTED COHORTS

Cohort	Age in 1981	Cumulative fertility at the end of 1992		
		Observed	Hypothetical	Deviation
1945	36	1.78	1.75	2 %
1950	31	1.85	1.69	9 %
1955	26	1.85	1.61	15 %
1960	21	1.72	1.55	11 %

The percentage deviations between observed and hypothetical fertility range from 2% to 15%. These are an upper measure of the impact of the new legislation: had the fertility decline been slower during the 1980s than in the 1970s, the deviations would naturally be smaller.

The two approaches put limits on the impact of the pronatalist policy implemented in the early 1980s. For a final assessment, we can say that these measures have not resulted in any marked upturn in fertility compared to c. 1945. The observed increase is also, and in larger part, due to a change in fertility behaviour which had started prior to the measures: earlier fertility timing. At most, we can say that the pronatalist policy checked a fall which had started at the beginning of the 1970s, and which might otherwise have continued in the 1980s on the scale suggested by the hypothetical fertility values.

Current trends The fertility decline observed in Russia since 1987 is, to a large extent, an effect of the family policy measures adopted in 1981. As is often the case, these measures produced changes in fertility timing rather than any substantial change in family size. They encouraged couples to have children they would no doubt have had anyway, but later. This move forward ended in 1987, and the fall observed since is in part a pendular swing following the preceding rise: women are now having fewer children because those they wanted are already born. These trends confirm a common observation: the impact of pronatalist measures is strongest when they have just been introduced. Across time, the pronatalist measures adopted in 1981 have lost their originality and, consequently, their capacity to stimulate fertility.

The recent fertility decline is, therefore, in part independent of the developments in Russia since 1989. However, we note, among the youngest women, a change of course in 1991 and 1992. Thus, in cohorts born since 1970, the earlier-fertility trend observed up to 1990 came to a halt in 1991 and 1992. Consequently, the fertility rates at ages 20 and under, which

had risen up to 1990 – while at ages 21 and over they had been diminishing since 1987 – have also started to fall.

Beyond these short-term fluctuations, what are the deeper trends emerging in the most recent cohorts?

In Table 7, we compare the cumulative fertility achieved at different ages in a number of cohorts, from c. 1945 (women who have practically completed their families) to c. 1970 (who are barely starting them). There is a clear increase up to cohorts born about 1960: at age 32, the cumulative fertility of c. 1960, 1.72 children per woman, is 11% higher than in c. 1945 (1.56). If this difference were to continue, completed fertility in c. 1960 would be close to 2 children per woman. But among women born

TABLE 7. – CUMULATIVE FERTILITY (PER WOMAN) IN COHORTS 1945 TO 1970

Age at last birthday	Birth cohort					
	1945	1950	1955	1960	1965	1970
15	0.000	0.000	0.000	0.000	0.000	0.000
16	0.002	0.001	0.002	0.002	0.004	0.005
17	0.009	0.008	0.009	0.013	0.017	0.023
18	0.038	0.032	0.038	0.048	0.059	0.074
19	0.104	0.093	0.112	0.132	0.152	0.186
20	0.216	0.207	0.242	0.274	0.299	0.348
21	0.358	0.363	0.407	0.443	0.476	0.516
22	0.507	0.530	0.577	0.620	0.662	0.662
23	0.659	0.688	0.736	0.795	0.834	
24	0.806	0.839	0.879	0.954	0.988	
25	0.940	0.974	1.008	1.099	1.117	
26	1.061	1.098	1.127	1.239	1.218	
27	1.171	1.209	1.240	1.368	1.296	
28	1.269	1.309	1.353	1.477		
29	1.357	1.393	1.448	1.564		
30	1.436	1.467	1.532	1.633		
31	1.503	1.533	1.612	1.685		
32	1.558	1.582	1.684	1.722		
33	1.605	1.648	1.740			
34	1.641	1.694	1.783			
35	1.671	1.731	1.814			
36	1.696	1.767	1.836			
37	1.718	1.797	1.851			
38	1.736	1.818				
39	1.749	1.832				
40	1.759	1.841				
41	1.767	1.847				
42	1.772	1.850				
43	1.776					
44	1.777					
45	1.778					
46	1.778					
47	1.778					
48	1.778					
49	1.778					

after 1960, a downward trend is emerging, so that c. 1965 has fewer children at age 27 than c. 1960 (1.30 and 1.37 respectively). The detailed results relative to the youngest women (not shown) confirm this decline[14].

The growth of fertility in cc. 1945 to 1960 has been due principally to second and third births. This is clear in Table 8, where we break the growth down by birth order and compare c. 1945, aged 33 at the census of 1979, to c. 1955, the same age at the census of 1989.

TABLE 8. – MEAN NUMBER OF CHILDREN OF EACH BIRTH ORDER BY THE AGE OF 33, COHORTS 1945 AND 1955 (PER WOMAN)

Birth order	Birth cohort		Growth	Deviation	
	1945	1955		absolute	percentage
1	0.892	0.905	+ 1 %	0.013	9
2	0.546	0.631	+ 16 %	0.085	57
3	0.120	0.161	+ 34 %	0.042	29
4+	0.037	0.044	+ 4 %	0.007	5
Total	1.624	1.771	+ 9 %	0.147	100

Between these two cohorts, the greatest rise has been in third births (+34%), but since these have relatively little weight in the cumulative fertility at age 33 (7% in c. 1945), they represent only 29% of total fertility growth, which was due first and foremost to second births (57% of total variation). Can this upturn in second and third births be expected to last? This is one of the capital questions for the future. Table 7 gives a clue to the answer: the fall of fertility in c. 1965 is only observed after age 26, suggesting that this concerns rather second and third births.

First births will play a key role in Russian fertility trends, in view of their weight: in Table 8, we saw that a minimal growth in first births (+1%) accounted for 9% of the total difference in cumulative fertility at age 33 between c. 1945 and c. 1955. The slightest changes should therefore be examined attentively, bearing in mind that first births can continue to occur in the cohorts aged around 30 at the 1989 census.

The extent of these relatively late first births can be evaluated by comparing the mean numbers of first births observed in several cohorts at the censuses of 1979 and 1989 (Table 9).

Among women born in 1945, for instance, who were aged 33 at the time of the 1979 census, the mean number of first births was 0.89; ten years on, at the 1989 census, it had reached 0.92. Thus, c. 1955, who had had 0.90 first births on average by the age of 33, in 1989, can be expected to have a completed fertility of first birth order of 0.92. This level may

(14) Although in c. 1970 cumulative fertility at age 22 is the same as in c. 1965, it is lower than in c. 1968, where it peaked at 0.682.

TABLE 9. – MEAN NUMBERS OF FIRST BIRTHS, BY AGE AND COHORT

Cohort	Census of 1979		Census of 1989	
	Age	First births (per woman)	Age	First births (per woman)
1940	38	0.92	48	0.92
1945	33	0.89	43	0.92
1950	28	0.84	38	0.92
1955	//	//	33	0.90
1960	//	//	28	0.85

also be reached by c. 1960, who, at the age of 28 in 1989, had had 0.85 first births, slightly more than c. 1950 at the same age (0.84).

First births have consequently maintained unswervingly high levels, and continue to do so. This is one of the forces of Russian fertility.

In 1992, the women born in 1955 had achieved an average number of 1.85 children by the age of 37. Their completed fertility can be estimated at 1.92 children, broken down as follows:

1	2	3	4+	Total
0.92	0.66	0.19	0.15+	1.92

Overview and outlook

The hitherto unpublished data used for this analysis permit a global view of Russian fertility, as it has unfolded in the lives of women born since the eve of the First World War. Their childbearing history spans the years from the 1930s to the present day, a tumultuous period in Russian history, marked by the collectivization of agriculture, the Great Patriotic War, and profound social changes (transformation of the rural landscape, rapid urbanization) during the relatively peaceful years from Stalin's death to the *perestroïka*[15].

Three elements characterize Russian fertility developments during this period:

• In the cohorts born at the beginning of the century, fertility was still high, particularly in the countryside. The transition towards a low fer-

[15] Few studies have been published on this subject. See an article by A.Vichnevskij, S.Stcherbov, A.Anitchkin, V.Gretchukha and N.Donets «*Novejchie tendentcii rozjdaemosti v SSSR*» (New fertility trends in the USSR), *Sociologitcheskie issledovanija*, 1988, no. 3, which contains a reconstruction of cohort fertility trends from registration data by age group, and R.Sifman, *Dinamika rozjdaemosti v SSSR* (Fertility Dynamics in the USSR), Moscow, Statistika (ed.), 1974, in which cohort fertility is calculated from survey data.

tility-low mortality regime was far from being completed. Russian fertility was among the highest in Europe, comparable to the countries of the high-fertility 'crescent' running North-East to South-West. But, in the space of a few cohorts, the levels fell extremely fast: women born around 1910 had almost three children, those born shortly after the First World War barely more than two (2.2 in cohort 1925). The fertility decline started later in Russia than elsewhere in Europe, but was then more rapid.

• Twenty years on, the country had one of the lowest fertility levels: completed fertility was down to 1.8 children per woman in cohort 1945 (Figure 9). Russia has not experienced the baby boom that marks fertility trends in many parts of Europe. In cohorts born between 1930 and 1940, there is only a slowing-down of the decline, not the increase observed elsewhere (France, Sweden...) or at least a halt in the decline (Italy).

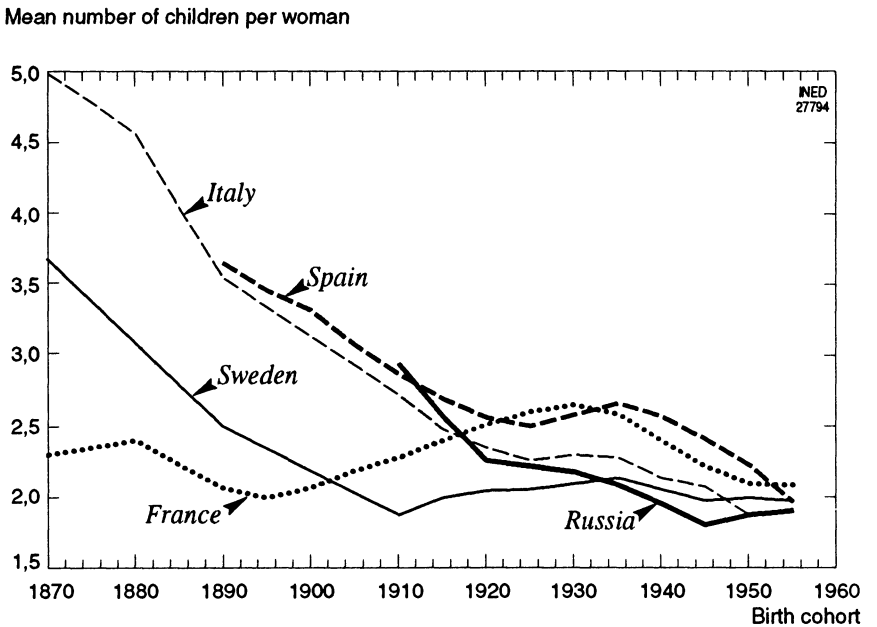

Figure 9. – Completed cohort fertility trends in a number of European countries

• The third peculiarity of Russian fertility is the recent pattern: the mean number of children per woman has risen (almost two in cohort 1955), whereas it is falling or is, at most, stable in the majority of countries. Thus, with women born in 1955, Russia has now joined the middle-fertility group (Table 10).

These fertility changes have hinged on births of third and higher orders. Figure 10, which shows the cohort trend in these births, compared

TABLE 10. – EUROPEAN COUNTRIES CLASSED BY COMPLETED FERTILITY IN BIRTH COHORT 1955 (DECREASING ORDER)

Country	Children per woman	Country	Children per woman
Ireland	3.00	Norway	1.94
Romania	2.32	**Russia**	1.92
Poland	2.25	Hungary	1.91
Czechoslovakia	2.13	Finland	1.84
France	2.09	Italy	1.84
Yugoslavia	2.08	Germany (East)	1.82
Bulgaria	2.02	Netherlands	1.80
Greece	2.01	Belgium	1.75
Portugal	1.99	Austria	1.75
Spain	1.98	Denmark	1.74
Sweden	1.96	Switzerland	1.70
United Kingdom	1.95	Germany (West)	1.57

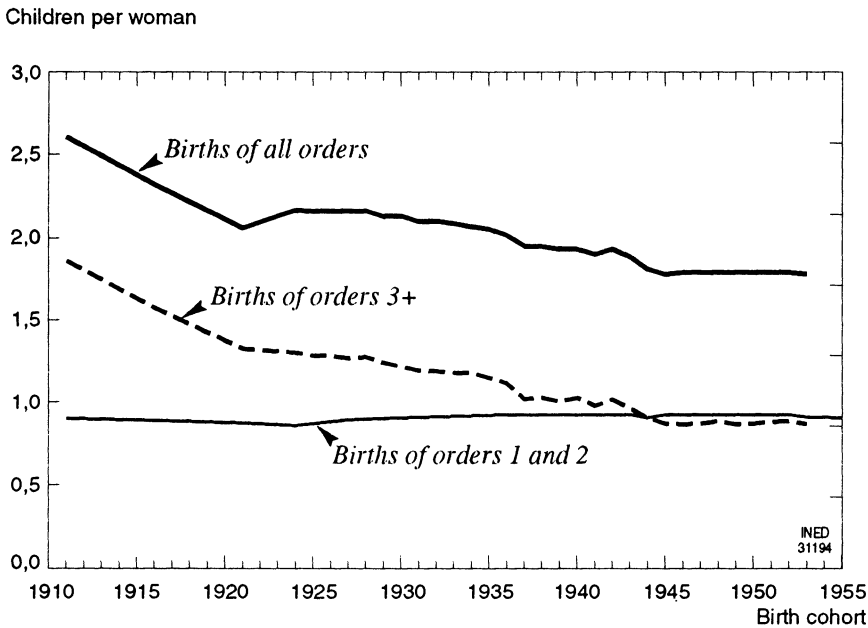

Figure 10. – Mean number of children by cohort and birth order

to first and second births and to all births, is quite clear: the curves for higher-order births and all births are virtually parallel. This pattern is a classic one[16], but two elements add a more typically Russian flavour:

[16] See A.Monnier, «La situazione demografica dell'Europa», in *Famiglia, figli i società in Europe*, Turin, Fondazione Giovanni Agnelli (ed.), 1991.

— the extreme stability of first and second births, first births being particularly unyielding. Their frequency is markedly high: come what may, Russian women have one child at least, unless they are sterile;

— the rareness of births of third and higher orders, which is already evident in cohorts born between the two World Wars.

The changes in fertility behaviour described above show the force of the one or two child family model in Russia. This should not be interpreted only in the restrictive sense (two children are enough), but also in the positive sense (at least one child). It could be summed up by "*at least one child, at most two*". Such a model does not ensure replacement. But the situation is not a new one: doubtless none of the cohorts born in Russia in the last 60 years has ensured its replacement. Nor is it exclusively Russian: fertility in France between the two World Wars[17] and in present-day Germany are both below replacement level.

In the complexities of the present political situation in Russia, birth trends have become an issue for political debate[18]. The Russian government is frequently blamed for the recent downturn.

In fact, the fertility decline started, in most cohorts, prior to the political events of the late 1980s. In the first instance at least, it was simply the counter-effect of a temporary rise produced by the pronatalist measures adopted in 1981. However, among the youngest Russian women, markedly lower fertility rates can be observed in 1991 and 1992, which interrupt a clear move towards earlier fertility timing. The number of births in 1993 (1.4 million, that is, 200,000 less than in 1992) suggests that the reduction among younger women has continued. This, together with a considerable fall in the number of marriages, no doubt reflects the cloud of uncertainty which, in the present difficult situation, is shrouding the future for Russia's youth.

In this context, it is of interest to try to forecast the short-term fertility trends in Russia.

We used two simple hypotheses to estimate the possible future course of natality, one based on the period approach, the other on the cohort approach. The calculations were made separately for the rural and urban populations, then combined to obtain the outlook for the whole of Russia (Table 11).

The first hypothesis is that the fertility rates observed in 1992 will repeat themselves in the next few years[19]. This hypothesis enables us to see the effect of the growth of the female population of childbearing age, from 37.2 million in 1993 to almost 40 million in the year 2000. This

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[17] See J-P. Sardon, «Generation replacement in Europe», *Population: An English Selection*, 3, 1991, 15-32.

[18] See A.Blum, «Démographie et politique en Russie», *Problèmes politiques et sociaux*, 711, 1993, La Documentation française.

[19] The small rise in TFR, from 1.51 to 1.56, reflects the changes anticipated in population distribution, supposing the slight excess urban-rural migration observed in recent years will continue.

factor is susceptible of increasing the number of births, in particular between 1995 and 1999 (from 1.57 to 1.66 million), even in the absence of a rise in fertility rates. This can be taken as a 'high' variant, since an upturn in fertility in the near future is improbable.

TABLE 11. – SHORT-RUN PROJECTIONS OF BIRTHS IN RUSSIA

	1993	1994	1995	1999
Women aged 15-49 (numbers)	37 243 700	37 920 100	38 427 400	39 507 300
High variant				
TFR	1.51	1.52	1.53	1.56
Number of births	1 539 900	1 552 200	1 569 400	1 664 900
Low variant				
TFR	1.40	1.28	1.18	//
Number of births	1 423 600	1 301 900	1 208 500	//

The second hypothesis is that the variations in fertility rates from one age to the next, that were observed in cohorts during the years 1991 and 1992, can forecast the short-run variations in cohort fertility. This is rather a 'low' variant: cohort fertility has fallen in recent years, a fall we interpreted as being, in part, a counter-effect of the pronatalist measures adopted in 1981. This hypothesis implies that a reduction of the same extent will continue, although its cause would not be the same, since it would reflect unfavourable fertility conditions and no longer a timing adjustment. With this hypothesis, there will be an appreciable drop in the number of births, from 1.6 million in 1992 to 1.2 in 1995, despite the increase in the population of childbearing age.

The observed number of births in 1993 – 1.4 million – tallies with the results of this second hypothesis, suggesting that the fertility decline in Russia is less and less the result of a timing change, a counter-effect of the upswing in the early 1980s, in which case it would tend to diminish over time, but reflects an actual reduction of fertility quantum.

Alexandre AVDEEV, Alain MONNIER

APPENDIX

RUSSIA : FERTILITY RATES (PER WOMAN) BY AGE REACHED DURING THE YEAR

Age	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
15	0.0002	0.0001	0.0001	0.0001	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002
16	0.0012	0.0014	0.0015	0.0012	0.0013	0.0009	0.0012	0.0012	0.0012	0.0013	0.0013
17	0.0048	0.0059	0.0075	0.0073	0.0071	0.0067	0.0053	0.0073	0.0062	0.0062	0.0062
18	0.0199	0.0213	0.0282	0.0285	0.0288	0.0273	0.0259	0.0239	0.0265	0.0248	0.0249
19	0.0481	0.0512	0.0604	0.0596	0.0671	0.0663	0.0647	0.0625	0.0574	0.0639	0.0604
20	0.0959	0.0971	0.1094	0.1034	0.1135	0.1166	0.1116	0.1141	0.1068	0.1019	0.1135
21	0.1331	0.1340	0.1494	0.1399	0.1429	0.1368	0.1400	0.1423	0.1425	0.1319	0.1377
22	0.1588	0.1550	0.1632	0.1572	0.1567	0.1441	0.1394	0.1526	0.1490	0.1521	0.1488
23	0.1813	0.1746	0.1713	0.1668	0.1664	0.1590	0.1439	0.1483	0.1529	0.1518	0.1600
24	0.1880	0.1825	0.1735	0.1660	0.1645	0.1581	0.1509	0.1419	0.1387	0.1446	0.1472
25	0.1857	0.1839	0.1707	0.1628	0.1567	0.1506	0.1465	0.1456	0.1302	0.1309	0.1375
26	0.1689	0.1732	0.1655	0.1553	0.1462	0.1377	0.1366	0.1388	0.1327	0.1220	0.1211
27	0.1585	0.1515	0.1526	0.1467	0.1376	0.1262	0.1227	0.1261	0.1227	0.1186	0.1106
28	0.1521	0.1483	0.1357	0.1348	0.1311	0.1203	0.1144	0.1147	0.1105	0.1090	0.1084
29	0.1375	0.1399	0.1231	0.1131	0.1162	0.1113	0.1057	0.1035	0.0986	0.0982	0.0973
30	0.1315	0.1319	0.1231	0.1135	0.1065	0.1046	0.1031	0.1007	0.0940	0.0913	0.0922
31	0.1185	0.1171	0.1160	0.1097	0.1011	0.0914	0.0931	0.0940	0.0874	0.0823	0.0832
32	0.1026	0.1021	0.0953	0.0938	0.0901	0.0832	0.0778	0.0814	0.0770	0.0737	0.0715
33	0.0927	0.0964	0.0841	0.0826	0.0812	0.0775	0.0732	0.0720	0.0696	0.0682	0.0659
34	0.0802	0.0804	0.0746	0.0703	0.0679	0.0650	0.0638	0.0644	0.0581	0.0590	0.0586
35	0.0756	0.0736	0.0664	0.0644	0.0598	0.0569	0.0572	0.0580	0.0527	0.0497	0.0511
36	0.0661	0.0665	0.0595	0.0547	0.0530	0.0490	0.0486	0.0493	0.0465	0.0434	0.0418
37	0.0558	0.0556	0.0509	0.0474	0.0440	0.0420	0.0403	0.0402	0.0381	0.0376	0.0360
38	0.0507	0.0491	0.0421	0.0415	0.0381	0.0348	0.0346	0.0334	0.0308	0.0312	0.0301
39	0.0421	0.0423	0.0345	0.0335	0.0313	0.0289	0.0274	0.0278	0.0250	0.0245	0.0235
40	0.0359	0.0348	0.0308	0.0279	0.0258	0.0244	0.0232	0.0220	0.0210	0.0196	0.0188
41	0.0303	0.0269	0.0250	0.0226	0.0205	0.0187	0.0179	0.0170	0.0155	0.0153	0.0141
42	0.0220	0.0204	0.0171	0.0167	0.0154	0.0134	0.0125	0.0121	0.0111	0.0104	0.0099
43	0.0158	0.0169	0.0135	0.0124	0.0120	0.0109	0.0097	0.0091	0.0083	0.0079	0.0070
44	0.0104	0.0095	0.0091	0.0081	0.0075	0.0074	0.0066	0.0059	0.0052	0.0050	0.0045
45	0.0073	0.0063	0.0056	0.0059	0.0048	0.0046	0.0045	0.0040	0.0033	0.0031	0.0029
46	0.0035	0.0032	0.0023	0.0020	0.0018	0.0015	0.0017	0.0017	0.0013	0.0011	0.0011
47	0.0025	0.0023	0.0019	0.0016	0.0016	0.0018	0.0014	0.0014	0.0013	0.0010	0.0009
48	0.0014	0.0013	0.0010	0.0009	0.0008	0.0008	0.0009	0.0006	0.0007	0.0007	0.0005
Total	2.58	2.56	2.46	2.35	2.30	2.18	2.11	2.12	2.02	1.98	1.99
Mean age	28.15	28.11	27.70	27.67	27.48	27.41	27.41	27.35	27.23	27.17	27.04

APPENDIX (cont.)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
15	0.0002	0.0002	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003
16	0.0015	0.0015	0.0016	0.0017	0.0018	0.0019	0.0022	0.0024	0.0026	0.0028	0.0030
17	0.0064	0.0073	0.0078	0.0074	0.0080	0.0088	0.0096	0.0103	0.0109	0.0112	0.0119
18	0.0256	0.0269	0.0283	0.0280	0.0289	0.0300	0.0315	0.0329	0.0348	0.0361	0.0360
19	0.0652	0.0674	0.0685	0.0705	0.0744	0.0749	0.0772	0.0790	0.0819	0.0847	0.0859
20	0.1139	0.1204	0.1213	0.1198	0.1274	0.1302	0.1322	0.1325	0.1350	0.1393	0.1421
21	0.1552	0.1563	0.1583	0.1548	0.1589	0.1635	0.1653	0.1629	0.1652	0.1673	0.1717
22	0.1593	0.1720	0.1674	0.1658	0.1698	0.1676	0.1708	0.1694	0.1695	0.1691	0.1725
23	0.1574	0.1595	0.1687	0.1576	0.1652	0.1619	0.1618	0.1611	0.1596	0.1575	0.1583
24	0.1542	0.1470	0.1476	0.1500	0.1507	0.1512	0.1508	0.1454	0.1443	0.1424	0.1422
25	0.1338	0.1397	0.1332	0.1315	0.1416	0.1355	0.1383	0.1335	0.1302	0.1296	0.1291
26	0.1214	0.1211	0.1276	0.1192	0.1229	0.1271	0.1243	0.1234	0.1208	0.1159	0.1163
27	0.1054	0.1130	0.1106	0.1128	0.1117	0.1106	0.1163	0.1109	0.1115	0.1060	0.1045
28	0.1006	0.1005	0.1049	0.0977	0.1047	0.0996	0.0996	0.1025	0.0992	0.0962	0.0950
29	0.0986	0.0940	0.0925	0.0892	0.0885	0.0927	0.0879	0.0883	0.0907	0.0844	0.0848
30	0.0898	0.0927	0.0879	0.0803	0.0824	0.0785	0.0814	0.0779	0.0769	0.0777	0.0736
31	0.0819	0.0826	0.0835	0.0763	0.0711	0.0718	0.0667	0.0694	0.0656	0.0637	0.0653
32	0.0712	0.0729	0.0712	0.0701	0.0644	0.0621	0.0586	0.0554	0.0576	0.0528	0.0530
33	0.0627	0.0635	0.0640	0.0603	0.0598	0.0558	0.0499	0.0489	0.0465	0.0469	0.0441
34	0.0554	0.0546	0.0540	0.0531	0.0504	0.0494	0.0440	0.0411	0.0402	0.0365	0.0383
35	0.0504	0.0489	0.0468	0.0447	0.0448	0.0415	0.0402	0.0365	0.0326	0.0315	0.0299
36	0.0426	0.0427	0.0418	0.0377	0.0376	0.0363	0.0334	0.0324	0.0287	0.0259	0.0255
37	0.0339	0.0351	0.0355	0.0330	0.0311	0.0294	0.0280	0.0259	0.0248	0.0220	0.0204
38	0.0289	0.0276	0.0284	0.0276	0.0265	0.0237	0.0221	0.0215	0.0192	0.0187	0.0167
39	0.0235	0.0225	0.0218	0.0218	0.0218	0.0202	0.0178	0.0166	0.0157	0.0145	0.0135
40	0.0183	0.0183	0.0175	0.0165	0.0168	0.0164	0.0149	0.0128	0.0118	0.0114	0.0099
41	0.0136	0.0133	0.0130	0.0125	0.0118	0.0118	0.0113	0.0102	0.0067	0.0081	0.0076
42	0.0094	0.0087	0.0091	0.0086	0.0087	0.0079	0.0078	0.0072	0.0066	0.0056	0.0051
43	0.0066	0.0061	0.0060	0.0057	0.0060	0.0054	0.0051	0.0048	0.0045	0.0040	0.0035
44	0.0039	0.0038	0.0035	0.0036	0.0035	0.0033	0.0031	0.0029	0.0027	0.0026	0.0023
45	0.0025	0.0021	0.0022	0.0020	0.0020	0.0019	0.0018	0.0017	0.0015	0.0015	0.0013
46	0.0008	0.0005	0.0005	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002
47	0.0008	0.0006	0.0006	0.0005	0.0005	0.0004	0.0005	0.0004	0.0004	0.0004	0.0003
48	0.0004	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Total	2.00	2.02	2.03	1.96	1.99	1.97	1.96	1.92	1.90	1.87	1.86
Mean age	26.86	26.76	26.71	26.62	26.48	26.36	26.18	26.08	25.94	25.78	25.67

APPENDIX (cont.)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
15	0.0003	0.0003	0.0004	0.0004	0.0003	0.0003	0.0004	0.0001	0.0003	0.0004	0.0005	0.0005
16	0.0034	0.0036	0.0037	0.0040	0.0041	0.0042	0.0045	0.0040	0.0047	0.0064	0.0068	0.0063
17	0.0127	0.0137	0.0148	0.0158	0.0165	0.0172	0.0183	0.0177	0.0199	0.0234	0.0246	0.0235
18	0.0369	0.0379	0.0414	0.0441	0.0455	0.0469	0.0509	0.0517	0.0557	0.0599	0.0603	0.0583
19	0.0830	0.0841	0.0886	0.0933	0.0957	0.0975	0.1040	0.1076	0.1118	0.1153	0.1115	0.1039
20	0.1374	0.1367	0.1409	0.1449	0.1465	0.1501	0.1556	0.1588	0.1612	0.1615	0.1540	0.1400
21	0.1689	0.1695	0.1706	0.1728	0.1727	0.1775	0.1818	0.1830	0.1810	0.1777	0.1680	0.1529
22	0.1715	0.1767	0.1791	0.1779	0.1771	0.1818	0.1855	0.1843	0.1774	0.1707	0.1601	0.1458
23	0.1593	0.1669	0.1747	0.1711	0.1688	0.1744	0.1766	0.1729	0.1641	0.1538	0.1436	0.1301
24	0.1440	0.1512	0.1620	0.1592	0.1570	0.1620	0.1636	0.1580	0.1536	0.1427	0.1267	0.1142
25	0.1305	0.1368	0.1482	0.1454	0.1452	0.1509	0.1515	0.1445	0.1387	0.1288	0.1130	0.1007
26	0.1190	0.1243	0.1350	0.1308	0.1317	0.1397	0.1399	0.1321	0.1213	0.1110	0.1008	0.0890
27	0.1079	0.1132	0.1231	0.1181	0.1181	0.1275	0.1288	0.1201	0.1097	0.1000	0.0892	0.0782
28	0.0969	0.1025	0.1126	0.1056	0.1059	0.1148	0.1166	0.1089	0.0978	0.0891	0.0790	0.0682
29	0.0874	0.0902	0.1010	0.0949	0.0943	0.1022	0.1044	0.0977	0.0872	0.0784	0.0689	0.0591
30	0.0780	0.0805	0.0885	0.0848	0.0840	0.0910	0.0929	0.0861	0.0775	0.0690	0.0598	0.0515
31	0.0662	0.0707	0.0777	0.0728	0.0732	0.0804	0.0816	0.0748	0.0669	0.0600	0.0520	0.0439
32	0.0573	0.0593	0.0672	0.0633	0.0621	0.0701	0.0718	0.0646	0.0573	0.0511	0.0445	0.0371
33	0.0464	0.0518	0.0560	0.0550	0.0538	0.0600	0.0625	0.0564	0.0495	0.0433	0.0375	0.0317
34	0.0379	0.0414	0.0480	0.0455	0.0461	0.0517	0.0532	0.0491	0.0426	0.0368	0.0316	0.0265
35	0.0324	0.0341	0.0380	0.0387	0.0378	0.0442	0.0452	0.0414	0.0362	0.0313	0.0266	0.0222
36	0.0253	0.0293	0.0303	0.0301	0.0314	0.0358	0.0380	0.0346	0.0296	0.0262	0.0221	0.0185
37	0.0213	0.0218	0.0251	0.0233	0.0239	0.0292	0.0300	0.0280	0.0240	0.0209	0.0180	0.0150
38	0.0163	0.0175	0.0181	0.0186	0.0180	0.0214	0.0233	0.0212	0.0191	0.0164	0.0140	0.0121
39	0.0129	0.0130	0.0142	0.0131	0.0143	0.0156	0.0168	0.0164	0.0139	0.0126	0.0108	0.0092
40	0.0103	0.0102	0.0102	0.0101	0.0099	0.0120	0.0120	0.0115	0.0103	0.0090	0.0083	0.0069
41	0.0074	0.0078	0.0073	0.0070	0.0071	0.0077	0.0088	0.0076	0.0070	0.0064	0.0058	0.0051
42	0.0052	0.0051	0.0053	0.0048	0.0045	0.0053	0.0054	0.0055	0.0045	0.0042	0.0039	0.0034
43	0.0032	0.0034	0.0033	0.0032	0.0029	0.0033	0.0036	0.0033	0.0031	0.0025	0.0024	0.0021
44	0.0019	0.0020	0.0020	0.0018	0.0019	0.0019	0.0020	0.0021	0.0017	0.0016	0.0013	0.0012
45	0.0012	0.0011	0.0010	0.0010	0.0010	0.0011	0.0010	0.0011	0.0009	0.0008	0.0007	0.0006
46	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0003	0.0001	0.0001	0.0001	0.0001
47	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001
48	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Total	1.88	1.96	2.09	2.05	2.05	2.18	2.23	2.15	2.03	1.91	1.75	1.56
Mean age	25.74	25.81	25.91	25.79	25.77	25.97	25.97	25.79	25.50	25.23	25.02	24.85

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